

3 1761 11969519 5



Energy  
Ontario

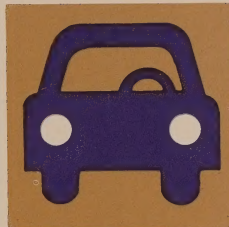
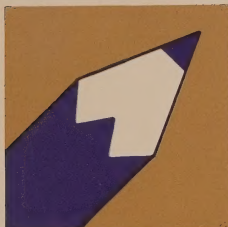
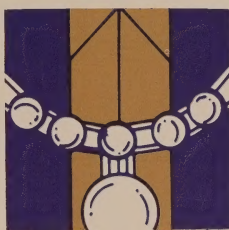
APR 9 1984

Government  
Publications

# Energy Conservation through Transportation Program Management

CA20N  
DT  
-2304

An Overview of Municipal Opportunities





Digitized by the Internet Archive  
in 2024 with funding from  
University of Toronto

<https://archive.org/details/31761119695195>



# Energy Conservation through Transportation Program Management

An Overview of  
Municipal Opportunities

published by

**TEMP**

Transportation Energy Management Program



Published by:

The Transportation Energy  
Management Program (TEMP)

Transportation Technology and  
Energy Division

Ontario Ministry of Transportation  
and Communications

Hon. James W. Snow, Minister

H. F. Gilbert, Deputy Minister

Ontario Ministry of Energy

Hon. Robert Welch, Q.C., Minister

G. R. Thompson, Deputy Minister

Published without prejudice as to  
the application of the findings.

Crown copyright reserved;  
however, this document may be  
reproduced for non-commercial  
purposes with appropriate  
attribution.

For additional copies write:

TEMP

Ministry of Transportation and  
Communications

1201 Wilson Avenue

Downsview, Ontario

Canada M3M 1J8

March 1983



# A Framework for Action

The wise use of limited and costly resources is the very essence of good management. And energy is a resource which today gives managers plenty of opportunities to hone their skills. Given the direct link between energy and money, there is little doubt that energy will continue to be a major preoccupation for years to come. In this environment, it only makes sense to establish a comprehensive energy management framework within which an adequate, multi-year response can be directed.

The benefits of a comprehensive energy management approach are easily demonstrated at the municipal level, where economic constraints are severe and where significant amounts of energy are used and controlled. In addition to the direct use in buildings and fleets, municipal governments have major energy impacts through their planning and transportation policies and regulations. A growing number of Ontario municipalities are recognizing that effective energy management can play a significant role in improving their economic performance through these demanding times. Not only will the direct and indirect dollar savings add up, but the “psychology” which an effective energy program creates throughout their organization and their community, will impact in other areas as well.

A large number of Ontario municipalities have already implemented isolated energy-saving measures. However, it is those taking a comprehensive management approach who are beginning to achieve truly significant results.

Part of being comprehensive is going beyond the buildings-oriented conservation measures many municipalities begin with, to tap the savings potential inherent in their fleet operations and transportation planning functions. Certainly, in terms of community-wide energy impacts, transportation energy management measures offer the greatest savings potential for municipalities. And for Ontario, these measures help address one of our major energy challenges — that of significantly reducing the oil demands of our transportation system.

This booklet focuses on how a municipality can effectively plan and direct the implementation of a comprehensive transportation energy management program. It draws on proven management techniques and the experience of Ontario municipalities to suggest how manpower and resources can be organized to ensure success in achieving reasonable energy management objectives. Recognizing that each department and each municipality has a unique set of needs and characteristics, the booklet outlines a context within which individually-tailored management systems can be developed.

By following the management framework outlined in this booklet, municipalities can maximize the economic advantages of reducing transportation-related oil consumption.

- Dollars that would have been spent paying for foreign-owned oil, can be kept in the local economy.
- The need for costly roadway expansion can be eliminated or at least postponed.
- Municipal energy budgets can be reduced through lower fleet operating expenses.
- Transportation safety levels can be improved.
- Noise and air pollution levels can be reduced.

## Ingredients for Success

The accumulated experience of Ontario municipalities clearly indicates there are certain ingredients necessary for a successful energy management process.

Choosing a general management approach is the first priority. Most municipal governments in Ontario have found the most practical method is to consider energy management as an additional function of each department and integrate it into normal operations. Another approach, dominant in Federal and Provincial settings, is to establish a separate department to review and direct energy programs throughout the organization.

In establishing a management framework to implement the chosen approach, experience-to-date suggests the following ingredients are essential for success:

- Strong, visible and lasting support from both council and senior management.
- The assignment of responsibility and authority for the program to one person, department, or committee, for effective leadership.
- The development and implementation of realistic programs with achievable goals and objectives.
- The identification of projects to meet the stated goals and objectives.
- The detailed planning and implementation of individual projects with an emphasis on co-ordination and communication.
- The establishment of a data base and a monitoring system to enable progress to be measured.

The following management framework outlines effective techniques municipalities can use to ensure that the above elements contribute to the success of their energy management program.

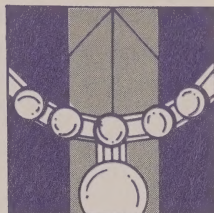


# A Management Framework

## Step One:

### Senior-Level Commitment

---



The single most important determinant of success for an energy management program is the level and continuity of support from municipal council and senior management. Unless these key decision-makers recognize the need to assign priority, staff and funds to the program, success will be severely restricted. In addition to providing needed resources, this support helps ensure the co-operation of all departments and can stimulate broad participation, further enhancing program success.

This commitment and support can be expressed in a number of ways, including:

- the establishment of an energy management committee involving senior staff and even elected officials;
- the mention of transportation energy conservation goals, objectives and measures in official plans, etc.;
- the issuing of energy conservation directives to fleet personnel and other municipal staff;
- the support given to specific implementation proposals generated by the program.

To gain senior management support, specific energy-saving proposals must be thoroughly researched and effectively presented. It must be made clear that the measure will not only pay for itself within a reasonable timeframe, but that the total cost of the measure over its life-span will be significantly less than if it were not applied. One way of accomplishing this task is by the adoption of "life cycle costing".

An extension of this approach is to consider conservation measures as local sources of energy supply and hence sources of future "income" for the municipality. Consider the case of Pickering Transit. It found a way to turn a \$3,000 per bus capital expenditure into an additional \$2,925 in *annual* per bus "revenue". It accomplished this by converting its 22-passenger buses to propane. There are many similar opportunities in the municipal energy field which will continue to go untapped until their real economics can be clearly and appropriately presented to decision-makers.

Municipal energy managers will find the actual experience of other Ontario municipalities of significant help in documenting the costs and potential savings of proposed measures. This experience is included in the Transportation Energy Analysis Manual (TEAM) which is referenced on the last page of this booklet. In certain instances, the availability of provincial or federal subsidies can play a useful role in generating municipal support as well.

## ***Step Two:***

# **Assignment of Responsibilities**



Once the decision to proceed with an energy conservation program has been taken, it is important to draw the lines of responsibility for its management. Program responsibility can be assigned to an individual such as an Energy Co-ordinator, to a particular department, or to a committee established from all departments.

Whichever approach is taken, it is important that those people with program responsibility also be given the authority and support required for effectiveness. This will include ready access to senior staff, the provision of support staff, and access to all energy-related records of the municipality.

When responsibility for energy management is allocated to all departments, the need for effective internal communications and co-ordination of activity must be adequately addressed. The appointment of an Energy Co-ordinator has at least partially met this need in a number of jurisdictions. In addition, many Ontario municipalities have set up internal energy management committees with representatives from all departments where opportunities for energy conservation exist — typically, purchasing, engineering, works, transportation, transit operations, finance, planning, police, and fleet services. The more successful committees tend to have members with decision-making authority in their respective departments and a chairperson with the stature, time and commitment to provide effective leadership.

An interesting innovation which the Regional Municipality of Hamilton-Wentworth introduced into the structure of its energy-conservation committee was the concept of a rotating chairman. With the Engineering, Social Services, Finance, and Planning Departments all represented by their directors or other senior staff, it was decided to rotate the chairmanship duties on a yearly basis. In the first few years of the program, this practice gave two senior managers a turn at being responsible for directing energy-conservation activity in the region and tended to increase inter-departmental co-operation.

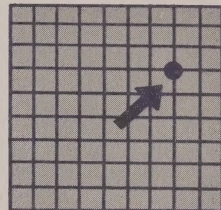


In smaller municipalities, the inclusion of elected officials in the energy management committee might be considered. Hastings County in Eastern Ontario has three councillors on its committee. This has helped ensure a high level of participation, co-operation and follow-through by member municipalities.

### Step Three:

## Goals and Objectives

---



Once responsibility for the transportation energy program has been decided, the next steps are to identify transportation energy conservation measures lying within the jurisdiction of the municipality and to define the goals and objectives for each measure. These must be clear, focusing on specific targets so that results can later be measured and evaluated.

Municipal transportation energy conservation measures fall into two distinct categories: those that directly affect municipal transportation budgets (i.e., fleet management and road construction and maintenance); and those that reduce traffic congestion and hence provide energy and travel cost savings to the user (i.e., improved street system operations, improved transit service, reduced travel demand, and land use planning). In addition to these categories, a separate measure that needs to be considered in anticipation of possible fuel shortages is contingency planning.

Some examples of specific goals that can be set for individual measures are given below:

- *Fleet Management:* To reduce energy consumption by municipal vehicles by 15 percent over a 2 year period.
- *Street System Operation:* To review traffic signal co-ordination in the major travel corridors every 5 years.
- *Reduced Travel Demand:* To convince downtown companies employing at least 40 percent of commuters to institute flexible working hours over an 18 month period.

# **Municipal Transportation Energy Conservation Measures**

## **(a) Directly Affecting The Municipal Transportation Budget**

### **Municipal Fleet Management**

*Energy-Use Reporting*

*Dieselization*

*Use of Alternative Fuels*

*Purchasing Specifications*

*Fuel-Saving Options and Devices*

*Vehicle Maintenance*

*Improved Vehicle Productivity*

*Driver Training*

### **Road Construction and Maintenance**

*Asphalt Pavement Recycling*

*Use of Asphalt Substitutes*

*Greater Use of Emulsified  
Asphalts*

## **(b) Affecting Road User Costs Within The Municipality**

### **Travel Demand Management**

*Energy-Conscious Land-Use  
Planning*

*Alternative Work Schedules*

*Parking Management*

*Auto-Restricted Zones*

### **Street System Operation**

*Traffic Flow Improvements*

*Preferential Treatment for  
High-Occupancy Vehicles*

*Bicycle Facilities*

*Pedestrian Facilities*

### **Transit Service Improvements**

*Reductions in Travel-Time*

*Improved Routing and  
Scheduling*

*Computerized Transit  
Information Systems*

*Optimum Vehicle Selection*

*Fare Programs*

*Better Transit Marketing*

*Vehicle Operating and  
Maintenance Improvements*

*Use of Alternate Fuels*

### **Ridesharing**

*Employer sponsored vanpooling*

*Employer sponsored carpooling*

*Preferential parking for carpools  
and vanpools*

*Paratransit*

## **(c) Other**

### **Contingency Planning**

*Developing a Municipal Plan*

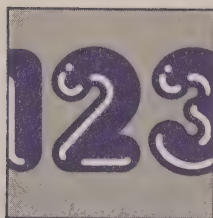
*Establishing Contacts and  
Procedures*



## **Step Four:**

# **Definition of Programs and Projects**

---



To help define the transportation energy management program in its initial stages, a list of suggested projects should be drawn up. If a management committee has been established, input from all levels of the departments represented should be included.

An assessment of this list will yield certain projects which directly address the goals and objectives set previously. These projects will naturally claim priority, and may be of a short or long-term duration. Both experience and sound judgement are needed to screen all potential energy-conservation measures. The Transportation Energy Analysis Manual (TEAM) has been produced to assist municipalities in this identification and assessment process. This Manual is referenced on the last page of this booklet.

## **Step Five:**

# **Data Base Development**

---



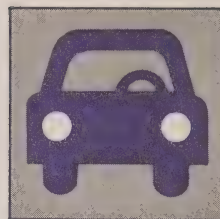
Establishing an energy data base helps the municipality define its current energy-use pattern, identify opportunities for savings, and assign priorities for action. Regular reporting and updating procedures enable managers to monitor progress towards desired objectives and evaluate various program elements.

For each element of the municipality's transportation energy management program, data should be collected to adequately describe the existing conditions. Sources for this data will primarily be existing accounting and energy-use records, as well as relevant studies and other information documents. To adequately track progress towards program objectives, new reporting and analysis procedures will need to be established.

Additional data and technical information on transportation energy use is available from the Ministry of Transportation and Communications, the Ministry of Energy, and their Municipal Transportation Energy Advisory Committee (see reference on last page of this booklet).



## **Step Six:**



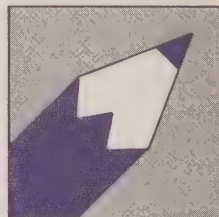
## **Implementation**

---

Once priority program elements have been identified and their potential impact assessed, a detailed plan can be developed to guide program implementation. This plan should attempt to build on the complementary nature of various elements to maximize overall energy impacts. It should also include time and resources for consulting with interested publics and maintaining close communications with key actors. The nature of these communications and the level of co-ordination of effort within the municipality will, in large measure, determine the success of the energy management program. The assignment of an Energy Co-ordinator and close attention to the effective operation of an energy management committee, will help ensure this success.

Without a spirited and continuous attempt to stimulate the involvement of municipal staff and the public, the objectives of the program will be difficult to achieve. This involvement is often tied to the level of support the program enjoys from municipal council and senior management. In the City of Nepean, the Mayor attended the first few meetings of that city's internal energy conservation committee to add motivation and stature to the committee. Other jurisdictions are using periodic newsletters and bulletin board posters to generate awareness and involvement as well as provide feedback.

## **Step Seven:**



## **Monitoring the Program**

---

Once the transportation energy management program is underway, it is important to continuously monitor its progress and quantify the impact of the various measures undertaken. These results can be used to determine whether the program is working as expected or whether alternative approaches are required. Results should be summarized and made available to municipal council, staff, and the public to generate further enthusiasm and support for energy conservation measures. Some studies have shown that effective recognition of individual efforts through frequent feedback on the resulting energy savings can alone save as much as 10 percent of the energy bill. A good data base and reporting system will provide the information required for this feedback.

# A Team Effort

Transportation energy conservation measures are already saving Ontario municipalities significant amounts of energy and money. In order to maximize their beneficial impact, they require a comprehensive management framework and the active support of municipal staff and the public. This booklet has outlined a management approach which municipalities can use to generate the kind of co-ordinated team effort required. By adapting this framework to its unique situation, any municipality can take advantage of the important savings which can result.

Support and technical assistance for municipal energy programs is available from the provincial government. For municipalities requiring more information on the measures discussed in this booklet, or on any aspect of energy conservation in municipal transportation, the Ontario government provides the following resources.

- **Municipal Energy Program Management** — The detailed report upon which this summary booklet was based is included as Chapter 9 in the Transportation Energy Analysis Manual (see below).
- **Transportation Energy Analysis Manual (TEAM)** — A comprehensive summary of a wide range of municipal energy conservation measures in the following areas: ridesharing, street system improvements, traffic management, road construction and maintenance, fleet management, contingency planning, managing municipal programs, and demand management. Available from TEMP (see address below).
- **Overview and Summary** — This first chapter of the TEAM Manual surveys the range of activities and programs available for increasing the energy efficiency of transportation systems in Ontario municipalities.
- **The Transportation Energy Management Program (TEMP)** is a joint Ministry of Transportation and Communications—Ministry of Energy program concerned with the reduction of oil dependence in the transportation sector. For information, write to:

TEMP, Ministry of Transportation and Communications  
1201 Wilson Avenue, Central Building, 3rd Floor  
Downsview, Ontario  
M3M 1J8  
Telephone (416) 248-7296

- **The Municipal Transportation Energy Advisory Committee (MTEAC)** was established to provide guidance, technical assistance, and coordination to municipalities undertaking conservation programs. For information, write to:

Mr. Frank Cherutti, Executive Secretary  
Municipal Transportation Energy Advisory Committee  
(same address as above)

- **The Municipal Energy Audit Program** offers grants to municipalities to hire energy auditors to establish record-keeping systems and help develop municipal energy management programs. The completion date for the program is March 1984. Contact: Subsidies Branch, Ministry of Municipal Affairs and Housing, 56 Wellesley Street West, 5th Floor, Toronto, Ontario M7A 2R8, telephone (416) 965-3500.
- **The Association of Municipalities of Ontario (AMO)** has established a Municipal Energy Conservation Program to provide a clearing house of information, approaches and results for municipalities implementing energy management programs. Contact: AMO, 100 University Avenue, Suite 902, Toronto, Ontario M5J 1V6, telephone (416) 593-1477.







Ontario

Ministry of  
Transportation and  
Communications  
Hon. James W. Snow  
Minister

Ministry  
of  
Energy  
Hon. Robert Welch, Q.C.  
Minister